

Fire, seasonal evergreen forests and conservation, Huai Kha Khaeng Wildlife Sanctuary, Thailand

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Abstract

In recent years, extensive areas of mainland Southeast Asia have burned, including important protected areas. Local peoples' light fires in and around protected areas most years. Fires are generally confined to dry deciduous forests (DDF) and savanna but in some years, burn much more extensively affecting seasonal evergreen forests (SEF) as well. SEF are sensitive to fire and convert to more open deciduous forest forms with repeat burning. There is concern that landscape-scale fires are adversely affecting the SEF formation in the region with significant consequences to the maintenance of regional biodiversity.

Research was undertaken in Huai Kha Khaeng (HKK) Wildlife Sanctuary, Thailand. Research objectives were to: 1) investigate the conditions for fire in SEF; 2) determine the frequency of fire season years between 1984 and 2001 with the conditions for fire spread in SEF; and 3) determine whether a significant relationship exists between pre-fire season drought codes (Keetch-Byram Drought Index and Canadian Drought Code) and identified SEF fire season years for 1981 to 2003. Methods included: Fieldwork lighting test fires and measuring fuel characteristics; generation of a twenty-one year daily relative humidity minimum record for SEF; and logistic regression of the pre-fire season drought code values (Keetch-Byram Drought Index and Canadian Drought Code) with identified SEF 'fire' and 'non-fire' years.

Results showed that: 1) SEF burn in years when there are fires burning in adjacent DDF or savanna vegetation in mid March and the moisture content of the SEF leaf litter is less than 15% at that time; 2) conditions for fire spread in SEF occur approximately every four years; and 3) a significant relationship exists between drought codes and SEF fire years. Implications are that landscape-scale fires in HKK can be managed by using January 31st drought code values to predict potential large-scale fire years, followed by efforts to gain the non-burn compliance of local peoples, and mobilization of fire suppression resources in those years. In other years, fires can be allowed to burn without serious threat to SEF, and should to some extent be encouraged to maintain dry deciduous forests and savanna. Additional research is required to determine whether a similar approach can be used for protected areas in other parts of the region.